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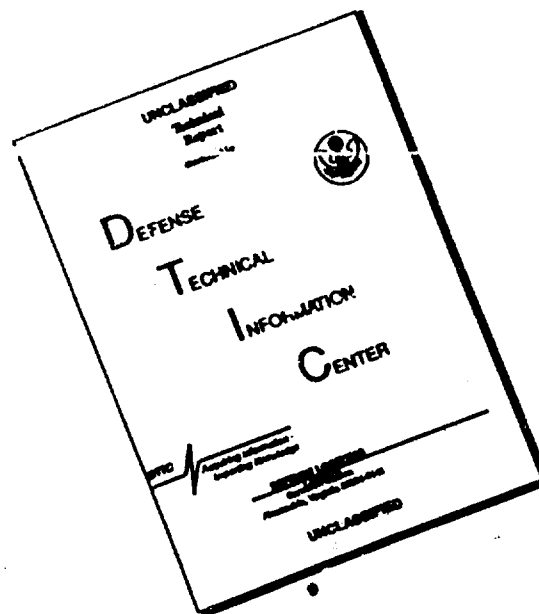
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Journal of Microbiology, Epidemiology and Immunobiology, No. 12, 1942, Pages 61-69

Advances of the Soviet Microbiologists in the Study of the Virus of Encephalites and of the Grippe, by A. A. Smorodintsev

(Extract of article; Subheading dealing with Autumnal Encephalitis - Pages 66-68)

In 1938-39, in the Primorsk region, there was discovered a hitherto severe neuroinfection - autumnal encephalitis. The first cases of autumnal encephalitis are observed usually near the end of August and in mid-September. In the next 15-20 days the number of infections sharply rises, and then quickly drops, and near the 1st of November, when the nightly frosts begin, the flare-up terminates. The average length of these epidemics is 40-50 days. Tied in with such a seasonality, it is called autumnal encephalitis.

The infected areas ravaged by this disease are wooded steppes, spread along the shores of lakes, grown over with reeds, and quickly becoming muddy after an increase in precipitation.

The flare-ups of autumnal encephalitis are accompanied by the appearance of hot weather with numerous sunny days. The epidemic of 1938-39 was accompanied by floods, which greatly aided in the development of the infection over wide territories. Infections in heavily populated areas and in large cities of the Primorsk were not noted.

Autumnal encephalitis starts unexpectedly. The patient complains of severe pain in the brow area, nasal discharge and general weakness, upset stomach, and vomiting. The temperature rises to 39-40°C quickly and remains so for 6-9 days. The face of the patient turns copper-colored; patient is sluggish, and with difficulty answers questions, in many patients the mind is obscure, which is accompanied by a sharp motive excitation, hallucination or on the reverse, a deep sleepiness, a general deafening and a complete

indifference.

In numerous cases the nervous system is quickly affected, the mind becomes obscure, breathing becomes difficult and the patient dies from paralysis of the breathing center. More often than all the death comes no later than 5 days after the start of the illness. The death rate with autumnal encephalitis is 50-60%.

In many people, recovered from the infection, there remains for a long time a general exhausting, loss of ability to work, headaches, sketchy memory, and sleepiness (Alperovich, Glazunov, Ponomov).

In 1938 the nature of the agent of autumnal encephalitis was interpreted (Smorodintsev, Shubladze, Neustroev). As with the agent of tick encephalitis, this is a filtering virus. The agent mainly concentrates in the brain of the patient and dead people, in a lesser quantity, in the blood, urine and spinal fluid. If a particle of the brain of a person, having died of the disease, is injected into the brains of white mice or monkeys, then after 2-10 days there develops convulsions and paralysis of the extremities. The virus, concentrated in the brains of ill mice, succumbs to being given over in time to well mice, injecting it into the brain through the mucous membrane of the respiratory path under the skin into the blood stream.

The encephalitis leaves, in those recovered, a life unsusceptibility to a secondary infection.

By the chart of infection and by the nature of the agent, autumnal encephalitis is analogical with Japanese encephalitis, well known in Japan already for many decades. There, every year, thousands die from encephalitis.

As in Japan, the vectors of the agent of autumnal encephalitis in the

Primorsk region are the mosquitoes. Among the 30 various types of mosquitoes, inhabiting the Primorsk, there were found 4 types, vectors of the agent of Japanese encephalitis (Petriskova, Snorodintsev, Shubladze). The microbe of encephalitis nests in the bodies of these mosquitoes and upon biting is injected under the skin of the person along with the saliva.

It was possible to repeatedly isolate the agent of autumnal encephalitis from the body of the mosquito-vectors, gathered in nature. The mosquito-vectors, infected artificially by feeding them on ailing animals, retain the agent of the infection in their bodies for a long time. Also established was the ability of the winged mosquito-vectors to transmit the virus to eggs and to the larva and pupa originating from them. If the infected mosquito winters, than the next season it can give a new generation, containing the virus of encephalitis. There is possible still another path of infecting well mosquitoes in the centers of infection; if people, domestic animals, rodents and birds are subjected to the bite of the infected mosquitoes, than the virus, injected by the mosquitoes, circulates for some time in the blood of the bitten person and animal.

For the prevention of autumnal encephalitis there are conducted draining of the infected area, destruction of the larva and pupa of the mosquitoes, by means of aviodusting with paris green or oiling of the cistern tanks. For protection against the mosquitoes, it is recommended that one wear a protective net, sprayed with a lysol solution, and guard the bed with cheesecloth.

To increase the immunity of the people living in the infectious areas to autumnal encephalitis, vaccine containing virus of this infection, rendered harmless by formaline, is injected under the skin. Infection among those immuned is of a lighter form and progresses quicker than in those not immuned.